

No. 709,261.

Patented Sept. 16, 1902.

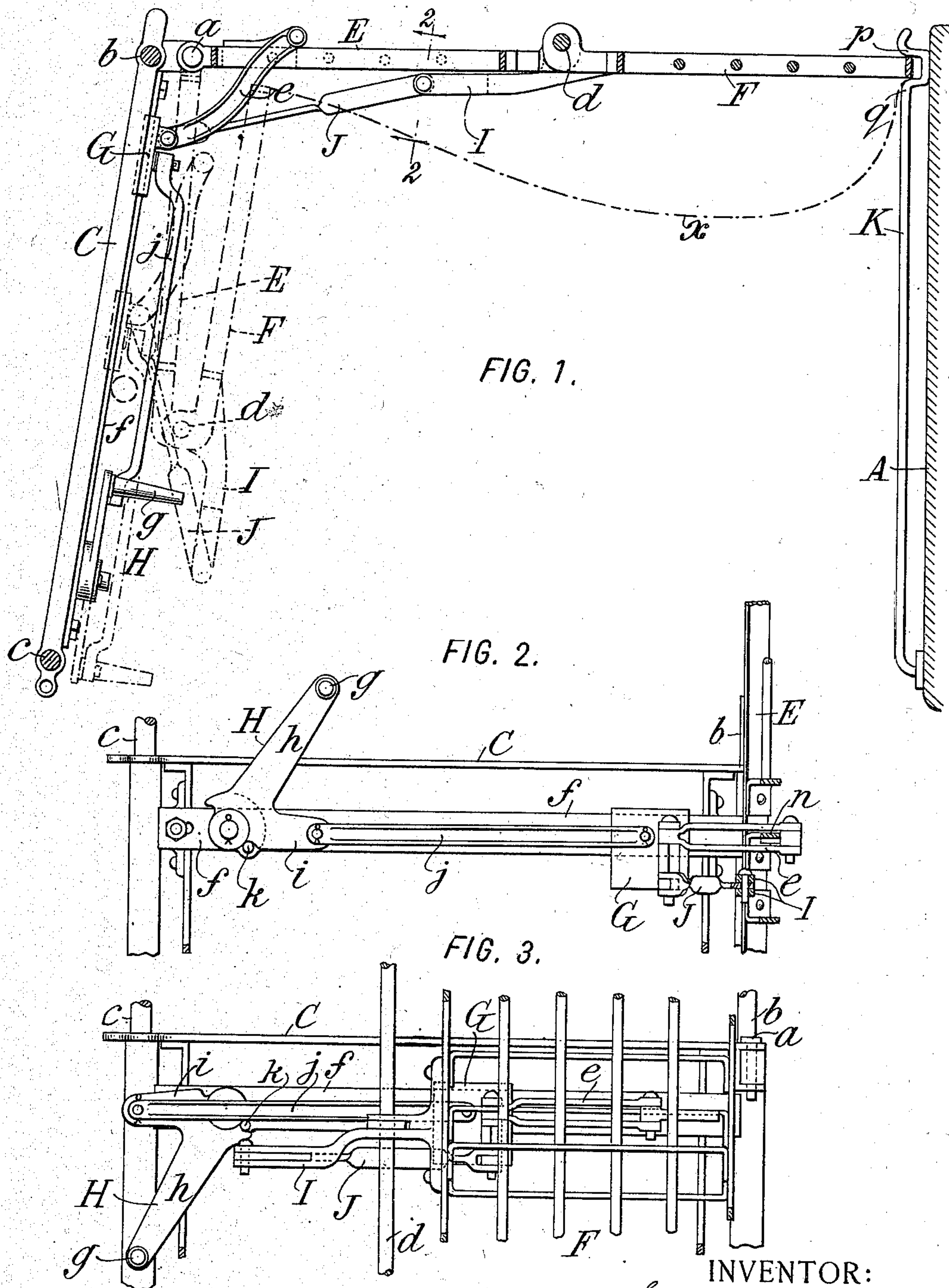
E. E. GOLD.

MEANS FOR OPERATING GATES FOR RAILWAY CARS.

(Application filed Oct. 16, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

FIG. 4.

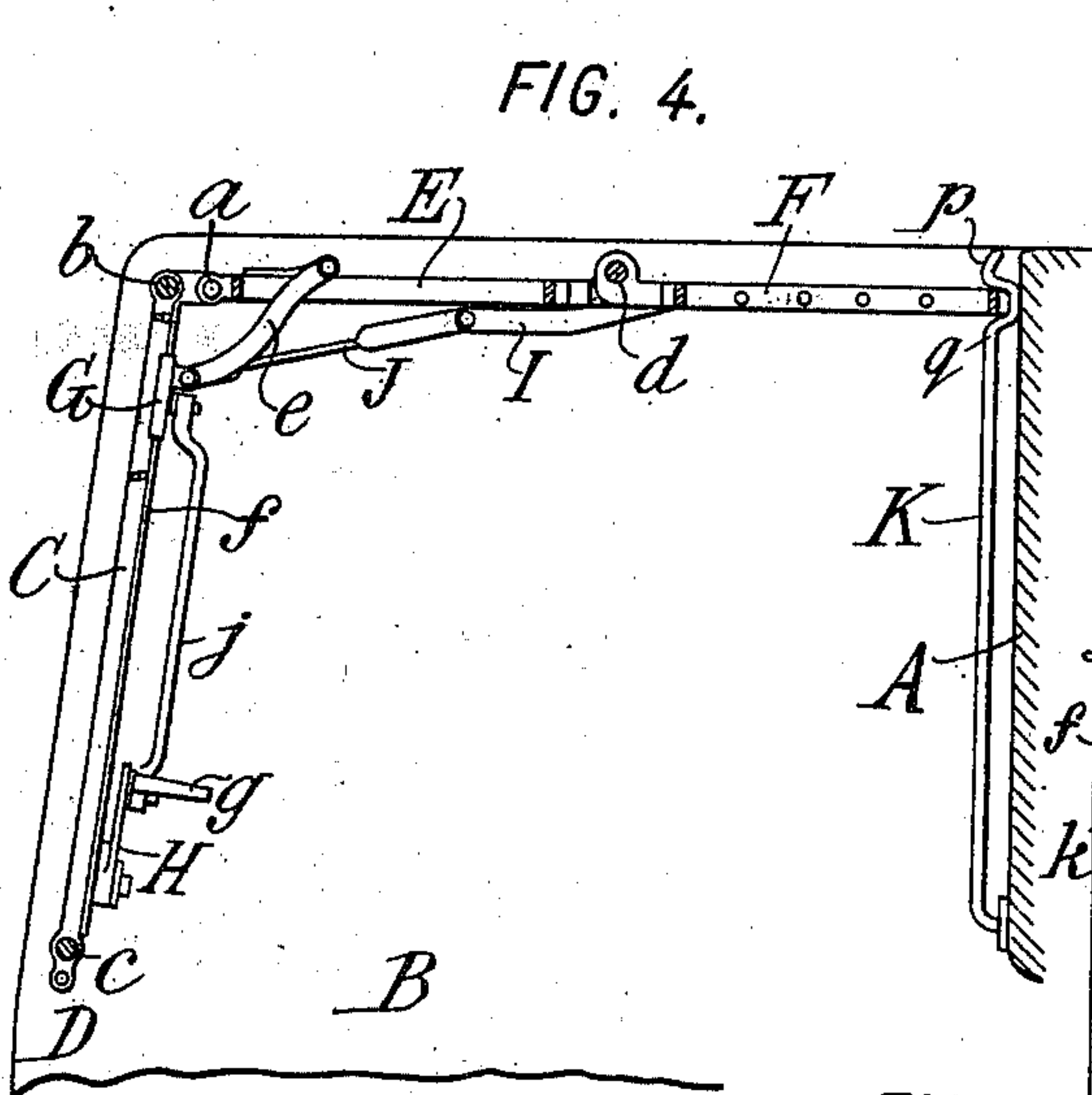


FIG. 6.

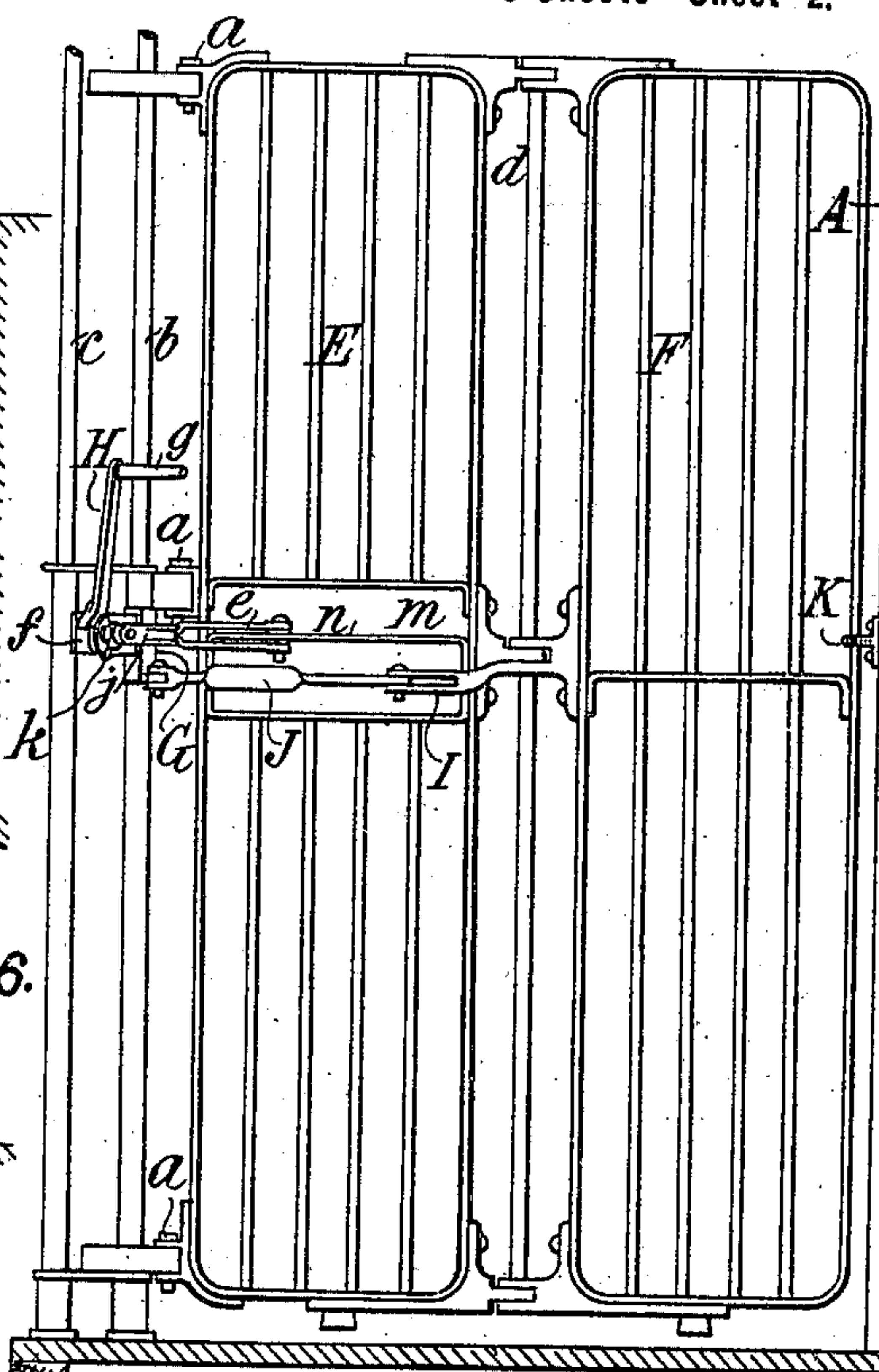


FIG. 5.

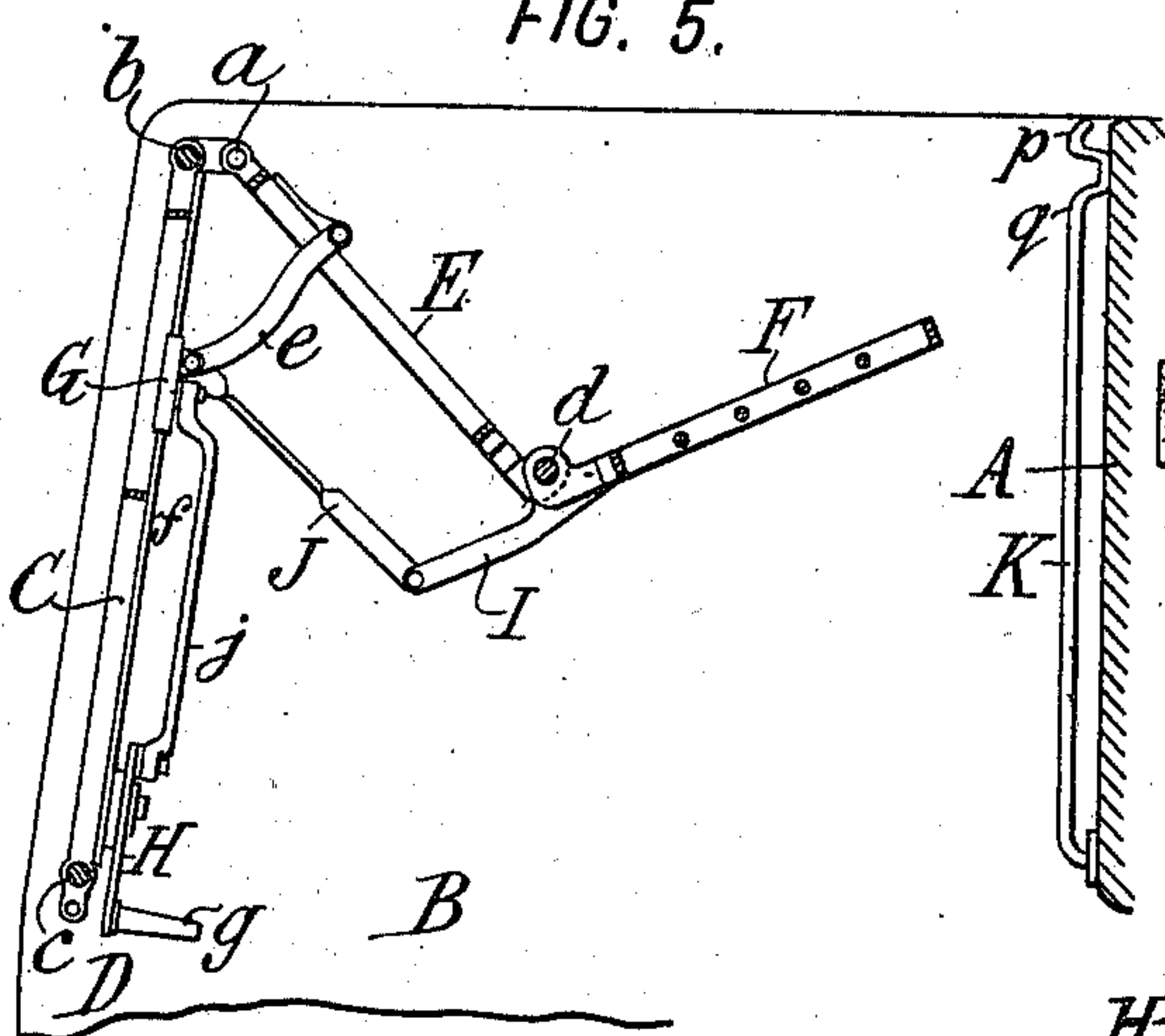
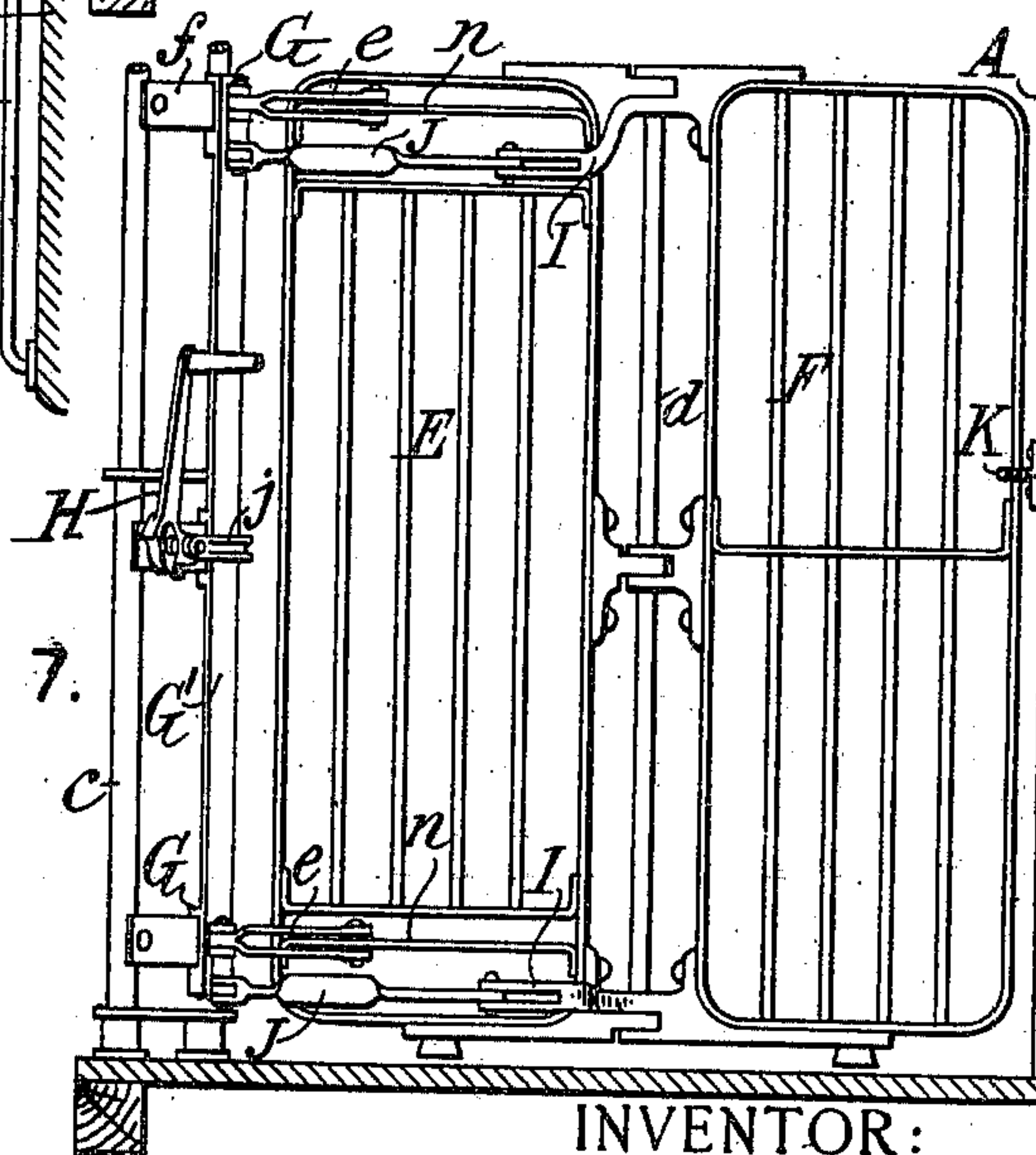


FIG. 7.



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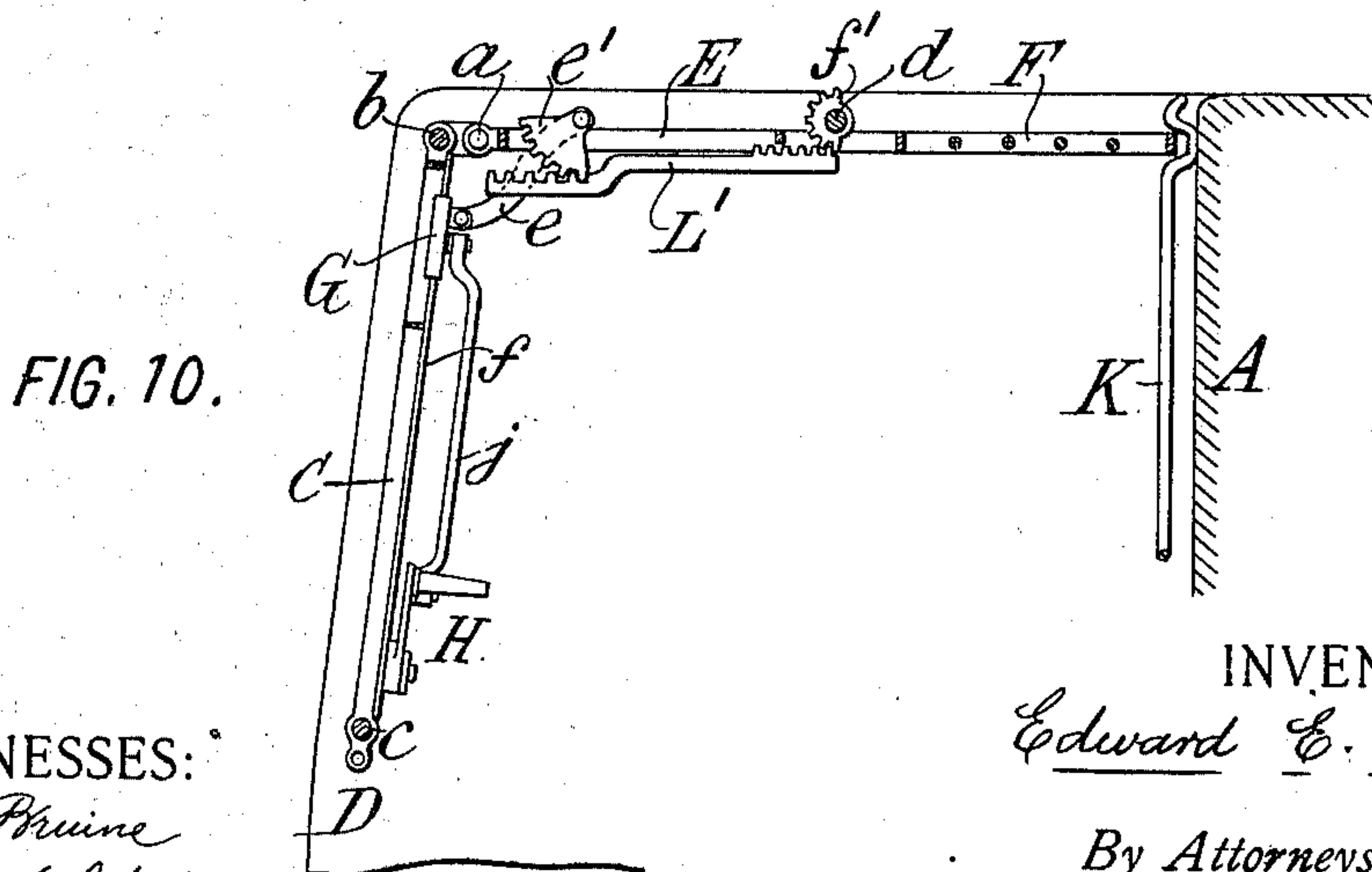
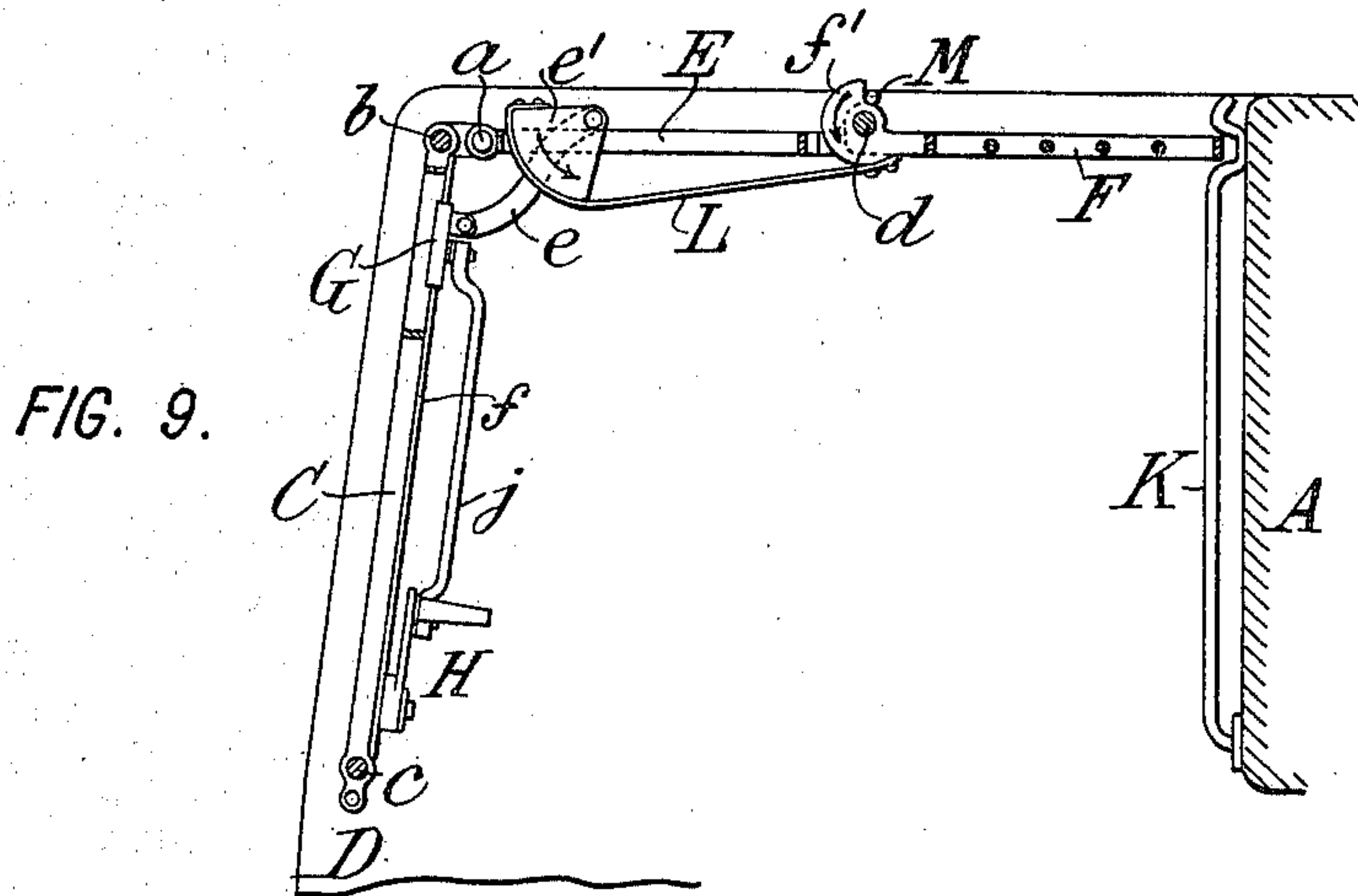
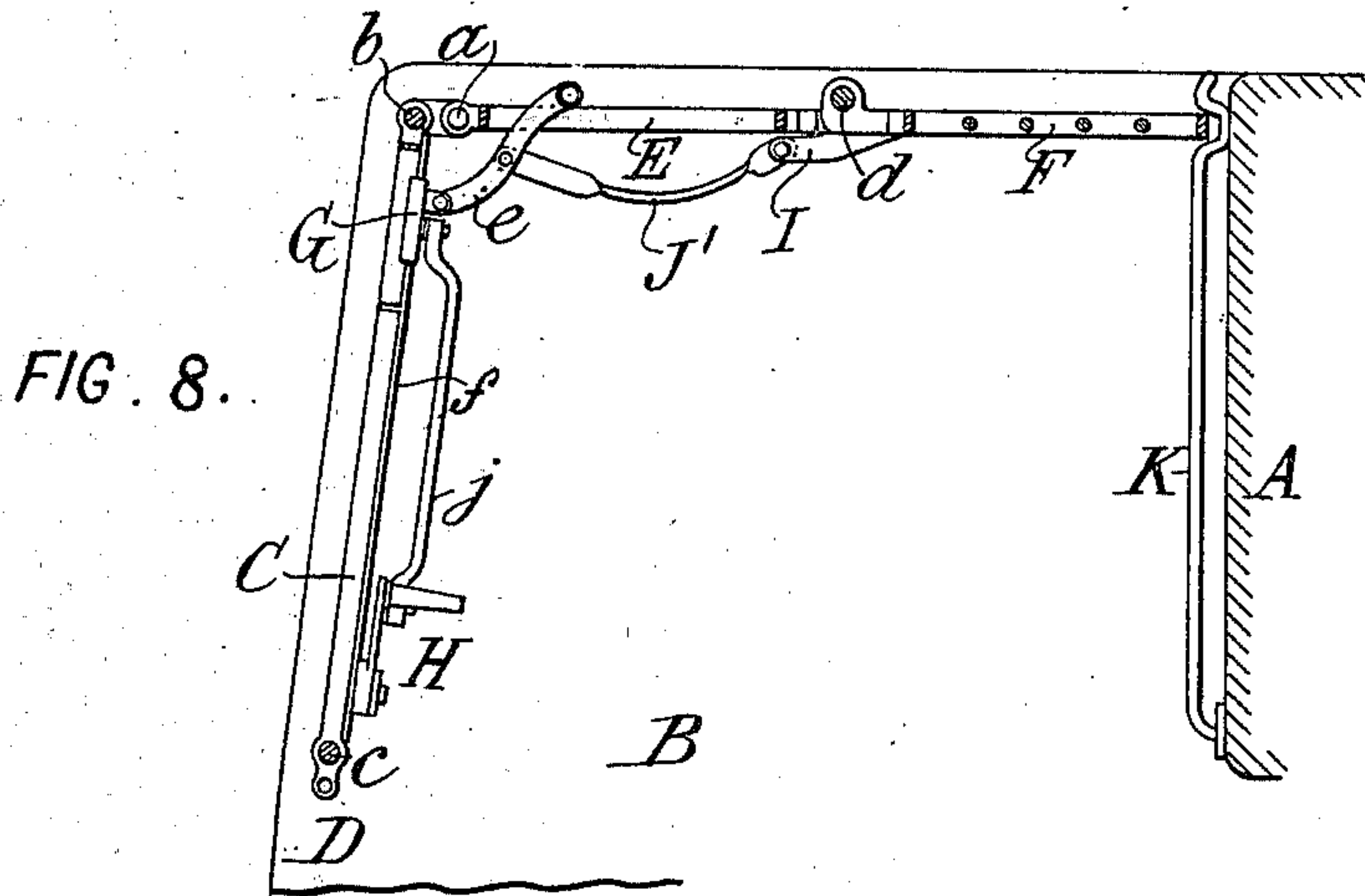
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MEANS FOR OPERATING GATES FOR RAILWAY CARS.

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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

EDWARD E. GOLD, OF NEW YORK, N. Y.

MEANS FOR OPERATING GATES FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 709,261, dated September 16, 1902.

Application filed October 16, 1901. Serial No. 78,828. (No model.)

To all whom it may concern:

Be it known that I, EDWARD E. GOLD, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Means for Operating Gates for Railway-Cars, of which the following is a specification.

The car-platform gates now commonly in use on elevated-railway and other rapid-transit trains are hinged to posts at the ends of the platforms and are opened and closed by an operating mechanism comprising a handle or crank, a slide moved thereby through a link connection, and a link connecting said slide with the gate. This gate-operating mechanism, commonly called a "gate-lock," is ordinarily constructed in the manner shown in Patent No. 347,057 of August 10, 1886, owned by me.

The object of my present invention is to adapt such platform-gate and operating mechanism to platforms of increased width—that is, those which project farther beyond the ends of the car. The width of the platform on such cars has heretofore been limited by the width of the gate, since to materially increase the width of the gate would cause its free edge to project into the passage between the cars when the gate is open. For this reason it is necessary with platforms exceeding a certain width to provide a double gate, or one which is jointed at or about the middle, so as to double up upon itself. My present invention provides means for controlling both leaves of such a double gate by the one operating-handle, so that as the gate swings open the two leaves or sections shall fold together. In this specification I shall refer to the two sections of the gate as "leaves" and shall distinguish them as the primary and secondary leaves, the primary one being that which corresponds to the ordinary gate as heretofore made—that is, it is the one which is hinged at one side or edge to a fixed post at the outer corner of the platform, while its other edge swings freely, and the secondary leaf being the one which is hinged to such free outer edge of the primary leaf.

In applying my invention I may employ for operating the primary leaf the same operating means that have heretofore been used for

operating a single gate, or this mechanism may be modified in any suitable way, while for operating the secondary leaf I provide a link or connection engaging and worked by the same operating mechanism and connected to the secondary leaf at such point as to move it concurrently with the swinging movement of the primary leaf. The preferred and most simple construction involves carrying an arm or projection from the secondary leaf and connecting it by a link with the slide of the main operating mechanism.

Figure 1 of the accompanying drawings is a sectional plan of the gate and operating mechanism, the latter being according to the preferred construction. Figs. 2 and 3 are fragmentary elevations viewed in the direction of the arrow 2 in Fig. 1, Fig. 2 showing the position of the parts when the gate is closed, the gate itself in this figure being in section on the line 2 2 in Fig. 1, and Fig. 3 showing the parts when the gate is open. Fig. 4 is a plan of part of the car-platform, showing the gate closed; and Fig. 5 is a similar plan showing the gate partly opened. Fig. 6 is an elevation of the gate, showing it closed and corresponding to Fig. 4. Fig. 7 is a similar view to Fig. 6, illustrating a modified mode of applying the operating mechanism. Figs. 8, 9, and 10 are plans of other embodiments of my invention.

Referring to the drawings, let A designate the end of the car, B the platform, C the usual railing closing in the end of the platform except for a central passage D between these railings for passing from car to car.

Let E designate the primary leaf of the gate and F the secondary leaf, the gate as a whole being designated E F. The primary gate E is or may be hinged in the usual or any suitable manner at *a* to any suitable support, usually to a projection from the usual upright post *b* at the corner of the platform. The secondary leaf F is hinged to the primary leaf E by hinges *d*. The end railing C is shown as supported between the usual fixed upright posts *b* and *c* extending between the platform and roof.

In the preferred construction shown the primary leaf E is operated by means of a link *e*, pivoted to the gate at one end and at the other to a slide G, sliding on a bar or

slideway *f*, which is usually supported by being bolted at its ends to the upright posts *b c*. The slide *G* is moved along this bar by an operating-lever *H*, having a handle or crank *g* on its long arm *h*, while its short arm *i* is connected by a link *j* to the slide *G*. In the closed position of the gate the link *j* and arm *i* are extended nearly in line with one another, as shown in Fig. 2, but with the axis of their joint somewhat below the line, so that any tendency to force the gate open simply crowds the lever down against a stop-pin *k*, which resists such movement. In the open position of the gate the operating-handle is turned down to the position shown in Fig. 3. This motion of the operating-handle pulls through the link *j* upon the slide *G* and carries the latter toward the operating-lever and in turn pulls through the link *e* upon the primary leaf *E* of the gate, which is swung to the open position shown in dotted lines in Fig. 1. For convenience in attaching the parts the primary leaf of the gate is preferably constructed with an opening *m*, as shown in Fig. 6, crossed by a bar *n*, which bar is embraced by bifurcations of the link *e*, as shown. For operating the secondary leaf *F* it is of course desirable for the sake of simplicity to utilize as much as possible of the same operating mechanism. To this end in the preferred construction I take the motion for operating the secondary leaf from the same slide *G* which operates the primary leaf. The secondary leaf has a rigid arm *I* projecting from it, and the end of this arm is connected to the slide *G* by a link *J*. When the gate is closed, the primary leaf is locked in position by the toggle effect of the arm *i* and link *j*, as already described. This determines the position of the hinge *d*, and hence gives a firm support for the hinged edge of the secondary leaf *F*, while the free edge of the latter is firmly pressed against a stop *p*, arranged to resist any effort to force the gate outward, while a lesser stop *q* is arranged on the inside of this free edge and resists any tendency to force the gate inward. The stops *p q* are conveniently formed by bending the usual hand-rail *K*, which extends along the end of the car. The hinges *d d* are preferably made as stop-hinges having on their inner sides abutting shoulders which resist any effort to force outward the middle part of the gate where the two leaves are hinged together. Thus the gate is very firmly locked and pressed into its closed position. To open the gate, the operator swings the handle *g* toward him and downward in the usual manner of operating single gates. This doubles up the toggle composed of the arm *i* and link *j*, thereby unlocking the slide *G* and drawing it inward along the bar *f*. This motion communicates a pull through the link *e*, as in any single gate, which swings the primary leaf *E* inward. The beginning of this movement tends to double up the gate, and this tend-

ency is assisted by the thrust of the link *J* upon the arm *I*. The action is best shown in the intermediate position of the gate shown in Fig. 5, wherein it is apparent that the link *e*, link *J*, arm *I*, and the portion of the leaf *E* between the connection of the link *e* and the hinge *d* constitute a quadrilateral frame the four elements of which are jointed together as in the so-called "lazy-tongs." The position of the primary leaf being determined by its connections, the link *J* and arm *I* serve to guide the secondary leaf in its movements. When the gate is fully opened, the secondary leaf folds in close against the primary leaf. In Fig. 1, where the gate is shown opened in dotted lines, the two leaves are for clearness shown somewhat wider apart than they are capable of folding. In the opening and closing movements the free edge of the secondary leaf follows a path indicated approximately by the line *x* in Fig. 1. It will be observed that in the final closing movement the free edge of the secondary leaf is thrust in almost endwise direction into the recess between the stops *p q* and that in the opening movement the first effect of the doubling up of the gate is to extricate its free edge from this recess. There is no outward movement of the free edge of the secondary leaf beyond the plane in which the gate lies when it is closed.

The relative location of the several operating parts may be varied considerably. For example, the mechanism for operating the slide may be at an intermediate point of the height of the gate, as shown in Fig. 7, and a pair of slides may be used, one above and the other below the operating means. In this figure the slides *G* are carried on slideways *f* and are connected by a bar *G'*, to which the movement of the link *j* is communicated. The mechanism for converting the sliding movement of *G* into a folding movement of the gate-leaves is also duplicated without any substantial difference in the construction of the gate-leaves themselves or of the operating parts.

Though I have described with great particularity of detail specific embodiments of my invention, yet it is to be understood that the invention is not limited to the specific embodiments described, but is capable of wide variation without departure from the invention. For example, the means for folding the secondary leaf in opening the gate may be other than the lazy-tongs mechanism above described, and it may be connected to the primary leaf or to the operating means of the primary leaf in a variety of ways. In Fig. 8 I show a simple modification of the mechanism of Fig. 1, in which a link *J'* connects the arm *I* of the secondary leaf with an intermediate point of the link *E* instead of with the slide *G*, as in the previous construction. The operation is substantially the same as with the apparatus of Fig. 1, the chief difference

being that in the open position of the gate the link J' is nearer to the outer post b and the rigid arm I may be made shorter.

In Fig. 9 still another means for folding the secondary leaf toward the primary leaf is illustrated. In this case a quarter-segment e' is fixed on the outer end of the link e and a semicircular segment f' is fixed on the pivoted end of the leaf F. The segment e' has twice the radius of the segment f' and has, therefore, the same length of arc. As the primary leaf is moved in the usual way the segment e' describes a quarter-circle in the direction of the arrows shown, releasing the band L, which connects it to the segment f', and allowing the free end of the gate F to swing inward under the action of a coiled spring, whose upper end is marked M. The length of band L released by the turning of the segment e' is just equal to that which would be wound on the segment f' under the action of the spring as the leaf F describes a semicircle to fold up close against the leaf E.

A still further means of transmitting the movement of the quarter-segment e' to a semicircular segment f' is shown in Fig. 10 diagrammatically. In this case the connection consists of a rigid bar L', transmitting movement in either direction and which is therefore the equivalent of the band L and the spring M together. The engagement of the bar L' with the segments is by means of racks and pinions, as shown.

I claim as my invention—

1. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means engaging the primary leaf and movable to swing it around its hinge-axis, and connected to the secondary leaf to fold it toward the primary leaf to open the gate.

2. A double railway-car gate comprising two leaves hinged together, the primary leaf being hinged to a support, combined with operating means connected to the primary leaf and movable to swing it around its hinge-axis, and means arranged within the closed position of the gate, connected to the secondary leaf and adapted to fold it toward the primary leaf to open the gate.

3. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means arranged within the closed position of the gate, connected to both leaves and movable to swing the primary leaf around its axis and to simultaneously fold the secondary leaf against the primary leaf to open the gate.

4. The combination of a double gate comprising two leaves hinged together, the pri-

mary leaf being hinged to a support, of operating means comprising an actuating part movable relatively to the primary hinge, a link connecting said part to the primary leaf, and an operative connection from said part to the secondary leaf, adapted to fold it toward the primary leaf as the latter swings open.

5. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating part for moving said slide, and an operative connection from said slide to the secondary leaf adapted to fold it toward the primary leaf as the latter swings open.

6. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever for moving said slide, and an operative connection from said slide to the secondary leaf comprising a link extending approximately parallel with the primary leaf, said means adapted to fold the secondary leaf toward the primary leaf as the latter swings open.

7. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever for moving said slide, and an operative connection from said slide to the secondary leaf comprising an arm projecting from the secondary leaf, and a link connecting said arm to said slide.

8. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever having a toggle connection with said slide adapted to lock the slide in the closed position of the gate, and an operative connection from said slide to the secondary leaf adapted to fold it toward the primary leaf as the latter swings open.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

EDWARD E. GOLD.

Witnesses:

DOMINGO A. USINA,
FRED WHITE.